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SUGGESTIONS FOR A TEACHING UNIT IN CONSERVATION OF LAND AND WATER

For Upper Elementary Grades

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SUGGESTION FOR A UNIT OF TEACHING IN CONSERVATION OF LAND AND WATER FOR UPPER GRADES ELEMENTARY SCHOOL

The theme running throughout this unit was to develop interest and knowledge of the land on which we live; our dependence upon it; the value of the topsoil; ground cover; water supply.

A study was made of erosion near the school; in the county; in the state; in the Southwest. The class surveyed the land near the school.

One group studied the history of the land since the white man's coming. Another mapped the land to scale, with the present erosion shown; a third group collected all possible data on conservation of land and water. Each group brought to class their findings, which were discussed and assembled. The whole group worked out constructive recommendations based on the study.

Division of Education - Information
Southwest Region, Soil Conservation Service
Albuquerque, New Mexico

CONSERVATION OF LAND AND WATER

General Objectives

1. To arouse interest of students in the land on which they live.

2. To study the land near the school, within a radius of several miles.

3. To know the meaning of such terms as: Land management, ground cover, forestry, woodland management, controlled grazing, ground litter, proper land use.

4. To study the water cycle; water sources; uses and benefits of water; destruction done by water, especially when Nature is unbalanced; precipitation; evaporation; transpiration; seepage; absorption; run-off.

5. To know how grass and trees grow; where plant food is manufactured; where plant food is stored; value of grass and trees to ground, i.e. (cover for ground, roots hold soil, grass and trees slow run-off, etc.)

6. To know what erosion is--natural, accelerated (wind, sheet, gully.)

7. To understand some conservation methods.

Learning Situations

We made study charts to call attention to certain fundamental principles in a study of the land, i.e. (water cycle, balance in nature, how plants and trees grow, proper grazing of land, and care of the forests.)

We divided the class into three groups: (1) Land Reconnaissance; (2) History of the Land; (3) Materials and Suggestions on Conservation and Conservation Structures.

The class studied the land around the school and each student reported conditions on his own or his family's ranch or farm; reported on farmland and on stock.

The class studied the valley, the grazing land and the forests on the upper watershed.

The class visited CCC Camps to obtain information and instruction on conservation, on water spreading structures, on revegetation, controlled grazing and planting.

Throughout the study, each of the three groups reported findings to the entire class. Activities and subject matter were correlated.

ENGLISH AND SOCIAL STUDIES
Objectives

1. To increase interest in our conservation programs: soil and water conservation; forest conservation; conservation of public lands.

2. To improve our powers of observation and our ability to report to others in an interesting way.

3. To speak with clarity and dramatic ability.

4. To write one interesting account of
   (a) Land use fifty years ago
   (b) Present land use and condition of land
   (c) Proposed improved land use
   (d) Use of water--need of--control of

5. To become familiar with current news on conservation in magazines, newspapers, government bulletins, movies, exhibits.

6. To increase interest in reading and broaden the scope of interest. Read at least one book on conservation and land use.

7. To increase vocabulary--spoken, written.

8. To become familiar with activities of conservation services.

9. To increase ability to digest and brief articles.

Learning Situations

We found out that the Civilian Conservation Corps Camps were doing work in soil conservation, forestry, and for the Grazing Division of the Department of Interior. We visited CCC Camps and wrote to government departments and to Chambers of Commerce; also, we collected material on conservation and land use. We visited the university for information.

We collected stories and accounts of the land in the early days from old inhabitants, from old newspaper files, from the library.

We made a reading file which we kept on current events in conservation. We collected pictures for a bulletin board and for a film strip. We marked with a star special articles. We recommended material for the Five Star Special Edition of our school paper.

One group wrote up the story of the land from the early days--Indian, white man, gold rush, miners, ranchmen, stockmen, irrigation projects--giving the picture in narrative of the land now and then.

Another group made maps and legends showing virgin land, land use years ago, and land use today, Erosion was marked on the map, and forests, woodland, mountains and irrigated valleys shown.

The third group wrote letters and made visits to Chambers of Commerce, government departments, and universities, and collected material on conservation and land use.

Each member of the class read a book on land and water dealing with land use, water use and conservation. Paul Sears' "Deserts on the March" was a favorite.

Short, five-minute talks were prepared from material which the class had written or had briefed from articles. A Speaker's Bureau was established from which speakers went out to other class rooms, auditorium periods, to other schools, men's and women's clubs, and churches.

We prepared posters and worked out captions, i.e.: "A reconnaissance of the land leaves no alibi for waste;" "A rolling stone may gather no moss, but watch the water catch the silt;" "No man knows his own field when he meets it in the river;" "Ground bare of vegetation is like a skinned thumb--it may lead to trouble;" "When things 'go up the river,' they come down, but when the topsoil goes down the river it won't come back."

There grew up the idea for a Five Star Special Edition of the school paper on conservation. We issued invitations to each class to contribute. We wrote letters explaining the plan. We started a vocabulary box, "Do You Know? Can You Guess? If So, Explain."

New Words and Phrases in Our Essential Conservation Vocabulary

reconnaissance	carbon dioxide	contour
water table	agronomy	strip cropping
watershed	ecology	grazing control
meander	transpiration	proper land use
accelerated	evaporation	bacteria
sacaton	precipitation	rotation of crops
mesquite	retrogressive succession	forestry
percolate	progressive succession	flood control
cultivated	incipient erosion	detention reservoir
organic	sheet erosion	revetment
notrogen	gully erosion	alkali
oxygen	wind erosion	diversion dam

Arithmetic

1. Evaluate good and bad land use.

2. Evaluate flood damage and proper control methods.

3. Evaluate good and bad grazing control.

4. Work out cost of dams, i. e., Coolidge, Boulder, in terms of silt deposit over a number of years.

Art

Make pictorial presentation of land and water uses, good and bad.

Manual Training (Design and build, from class recommendations)

Models, showing good and bad land and water uses and control.

Music (Compose or learn)

A few rollicking songs to stir interest in country, --America, Home on the Range, etc.

Problems were worked out by the classes to show economic value in conservation, i.e., Problem--- A man had 275 head of cattle and good grass. Five years later he had poor soil and no grass. He had to build dams costing $2000.00. How much did his dam cost per head?

Rain gauges were constructed, and a rainfall record kept by the class.

In Art Classes, a pictorial story of land long ago and now accompained the narrative from the English Class.

Film strips were planned and sent to the Soil Conservation Service to be made.

In Manual Training, we built models of land and water uses, showing good and bad land use. Contour furrows and terraces were shown.

The English Class supplied captions, which were made by the Art Class.

Study plots were located in the upper watershed, and reported on at intervals.

Maps were made of land around the school.

Photographs were taken of good and bad land use.

Science

Study of harmful rodents.

Study of wildlife now in existence in the Southwest; in our county. Compare to early days.

Study of trees in our county; in the state; in the Southwest; kind; grow at what elevation; how trees grow; care of forests.

Study plants, grasses, flowers; value in ground cover--value of roots, how they grow, etc. Retrogression of plants--progression of plants.

Study of soil profile in arroyo.

Study of evaporation; transpiration.

Study of water cycle. Study of water table.

Learning Situations

We visited some of the study plots of the university and saw the difference in plants when land is not grazed.

We studied evaporation and transpiration from plants. We put a glass over a growing plant and saw the moisture on the glass which had come from the plants.

We visited an arroyo and studied the roots in the bank. The grass roots are short. Some of the bushes have very long roots. The water table was so low that the grass roots were dying. We studied how willow roots travel a hundred feet through the ground. We saw the soil profile in the arroyo.

Results

We learned many things. We learned to value our land and rainfall. We learned that topsoil is important. It is a long time in the making, and easily and quickly lost when vegetation is gone.

1. Topsoil is important.
2. Vegetative cover is influenced by land use.
3. Water is necessary for growth.
4. It is important to catch water where it falls and use it many times.
5. Floods are expensive, destructive and wasteful.
6. Conservation of land and water is an economic necessity.
7. Floods wash away topsoil.
8. Unwise building of, and unprotected roads may promote erosion.
9. Proper number of stock, proper kind, proper herding of sheep and cattle, and seasonal use of ranges are important in stock management.

Results (Cont.)

10. Sheep trails are potential arroyos.
11. Forest fires are destructive, not only to trees, but to ground cover.
12. Forests need proper care--careful cutting, proper water supply, proper grazing management.
13. We depend upon our land to live.
14. Proper rotation of crops is a wise policy.
15. Grass and sod are important in the balance of nature.
16. It is unwise to plow a steep slope.
17. Proper land use is a determining factor in conservation and preservation of a people and country.

EXAMPLES OF CLASS COMPOSITIONS IN LAND AND WATER STUDY

Balance in Nature

We studied the interdependence of man and animals on the land. There are 250 known insects on a tree. The birds help to keep this army of insects balanced. The hawk helps control the number of birds. Worms feed off the trees and plants, and birds eat the worms. Grasshoppers eat the worms, but the birds eat the grasshoppers.

Rabbits eat grass and twigs, and the coyote eats the rabbit. Little rodents live on other animals and seeds, and they aerate the earth with their burrowings.

When nature is balanced, there is food and life for all. When the ground loses its vegetation, everything becomes unbalanced--trees gone, no roots to hold the soil, no insects for the bird, no food for the worm, etc. Little rodents dig frantically to store their food collected from far and near. With no roots to hold the ground, and no grass to catch the rain, water floods the rodent tunnel and erosion advances rapidly.